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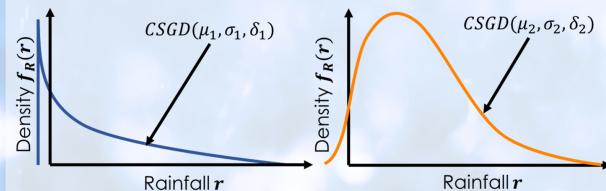
Characterizing and Communicating Global IMERG Error Estimates for End User Applications



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Error modeling with Censored Shifted Gamma Distributions (CSGDs)

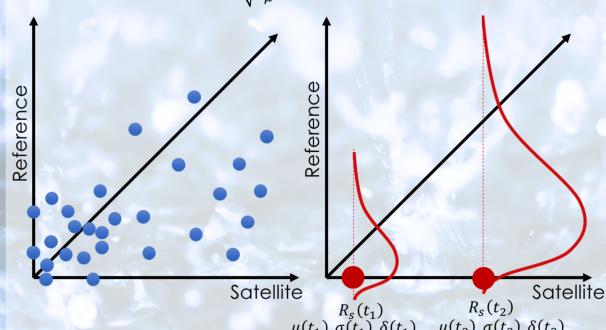


Nonlinear CSGD Error Model Framework:

$$\mu(t) = \frac{\mu}{\alpha_1} \log 1p \left[\exp(1/\alpha_1) \left(\alpha_2 + \alpha_3 \frac{R_s(t)}{R_s} + \text{covariates} \right) \right]$$

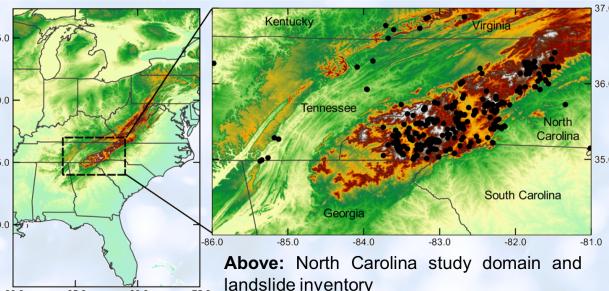
$$\sigma(t) = \alpha_4 \sigma \sqrt{\frac{\mu(t)}{\mu}}$$

$$\delta(t) = \delta$$

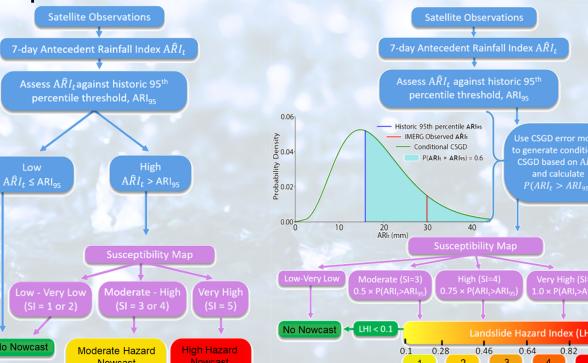


Above: Nonlinear regression CSGD error model generates PDFs of possible "true" precipitation conditioned on satellite observation $R_s(t)$

Landslide Hazard Assessment Using LHASA + Probabilistic Precipitation



Operational LHASA

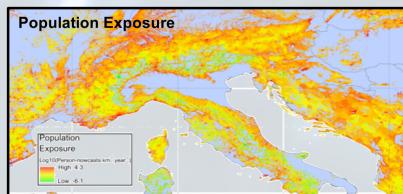


Above: Operational (left) vs. Probabilistic (right) versions of the Landslide Hazard Assessment for Situational Awareness (LHASA) framework

Expanded LHASA Capabilities

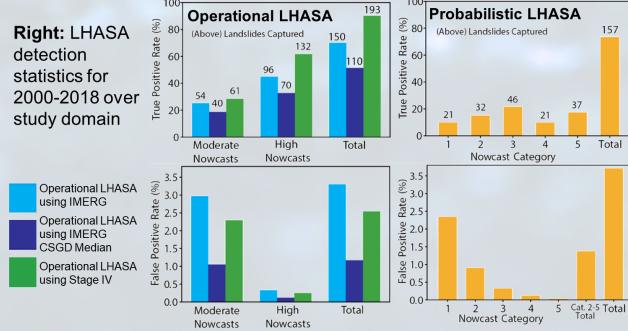
Global LHASA:

- **UPDATED:** IMERG retrospective analysis (2000–present)
- **UPDATED:** roads
- **UPDATED:** land cover and forest loss
- Tectonic faults
- Local bedrock
- Exposure modeling

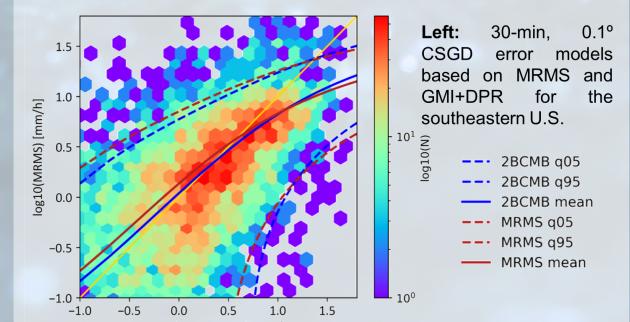
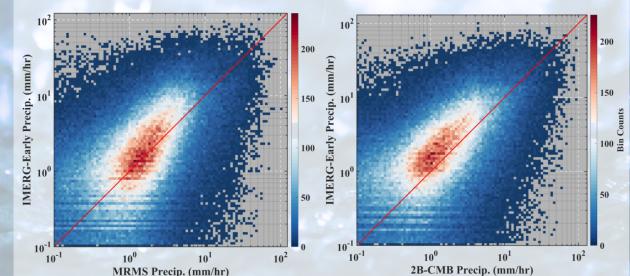


Right: LHASA nowcast rates overlaid on societal exposure.

Right: LHASA detection statistics for 2000–2018 over study domain



Developing a Prototype Probabilistic IMERG Dataset Using GMI + DPR



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